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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/053,365
Filing Date: October 26, 2001
Appellant(s): DAWES ET AL.

Matthew Mason
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 8/10/2009 appealing from the Office action mailed 09 March 2009.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is incorrect.

The amendment after final rejection filed on May 14, 2009 has been entered.

The amendment after final rejection filed on 24 April, 2009 has not been entered.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5158587	**KYOTO**	**10-1992**
4,178,347	**WALKER**	**12-1979**
5,043,002	**DOBBINS**	**8-1991**
4,575,463	**BISWAS**	**3-1986**
4,339,256	**SIMMS**	**7-1982**
4,118,295	**KORENOWSKI**	**10-1978**

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

Claims 1-3, 7-14, 17-21, 23, 29-30, 32-41, 44, 45, 51-53, 56, and 132-140 rejected under 35 U.S.C. 103(a) as being unpatentable over Kyoto 5158587 alone, or in view of Walker 4178347, Dobbins 5043002, Biswas 4575463 Simms 4339256 and Korenowski 4118295. (And which relied on Official Notice for claims 11,12 and 29).

Claim 1:

1. (previously amended) A method of manufacturing an optical waveguide preform,

See the TITLE of Kyoto.

said method comprising the steps of: providing a first gaseous atmosphere including a first halogen-containing gas to a soot preform contained in a vessel,

Looking to figures 4-5 of Kyoto, 2 is the soot preform contained in a vessel 3. The providing of an atmosphere including a halogen-containing gas is disclosed in Example 1 at col. 4 of Kyoto.

the first halogen-containing gas being selected from the group consisting of SiF4, SF6, CF4, C2F6, COF2, C2FaC12, and F2;

Kyoto's example 1 discloses SiF_4.

maintaining the first gaseous atmosphere between 1100 and 1300 °C, for a first reacting time sufficient to at least partially dope the soot preform,

Example 1 discloses the temperature of 1100 C. It is clear that Kyoto discloses the treatment is sufficient to add fluorine dopant to the soot preform, for example see col. 2, lines 49-51.

wherein the first halogen-containing gas has a partial pressure which decreases during the first reacting time,

It is noted that it is inherent that the partial pressure would decrease - clearly, since the fluorine is doped into the glass, the amount of fluorine in the gas would be reduced, which would cause the partial pressure to decrease. See also instant claim 10 which indicates reactants are consumed when applicant heads a porous glass preform in SiF_4. Since Appellant and Kyoto do substantially the same thing (heating a porous glass preform in SiF_4) one would expect the same result – at least a portion of the SiF_4 is consumed, thus lowering the pressure. One of ordinary skill understands from the Ideal Gas Law, that the lower the number of molecules in a gas, the lower the partial pressure.

wherein no more than 0.5 slpm of the first gaseous atmosphere flows out of the vessel during the first reacting time,

See col. 2, lines 52-63 and Example 1 of Kyoto, as well as figures 4-5. Figure 5 shows the Kyoto's preferred embodiment, where SiF_4 continuously flows into 8 and out 10. Figure 4 shows the less preferred embodiment, which lacks 10 - thus no gas can flow out. The plain reading of Kyoto's example 1, is that the gas is pressurized to 4 atmospheres and left for 2 hours, with no gas escaping. Alternatively, it would have been obvious to not let any gas escape because it does no good outside of the chamber.

and wherein the first gaseous atmosphere is pressurized to a gage pressure of at least 0.1 atm gage during the first reacting time;

Example 1 of Kyoto discloses 4 atmospheres.

evacuating at least a portion of the first gaseous atmosphere from the vessel;

Although not explicitly disclosed in Kyoto's non-preferred embodiment, it is clear that after the doping, it would be necessary to remove the remaining pressurized gas to retrieve the preform. The preferred embodiment clearly flows the atmosphere from the vessel. Furthermore, as discussed in more detail below, it would have been obvious to supply the gas in a semi-continuous manner - that is, supply the gas in a step- wise fashion. In a manner analogous with a clothes washing machine that rinses soapy clothes, removes the soapy rinse water, and then adds more fresh water for a second rinse cycle to completely remove any soap.

providing the vessel with a second gaseous atmosphere including a second halogen-containing gas, the second halogen-containing gas' being selected from the group consisting of SiF4. SF6, CF4, C2F6, COF2, C2F2C12, and F2;

Although Kyoto's preferred embodiment continuously resupplies the chamber with a gaseous atmosphere, the non-preferred embodiment does not. However, based on Kyoto's two modes of supplying gas, it would have been obvious to provide the gas in a step-wise fashion.

From MPEP 2144.04

E. Making Continuous
In re Dilnot, 319 F.2d 188, 138 USPQ 248 (CCPA 1963) (Claim directed to a method of producing a cementitious structure wherein a stable air foam is introduced into a slurry of cementitious material differed from the prior art only in requiring the addition of the foam to be continuous. The court held the claimed continuous operation would have been obvious in light of the batch process of the prior art.).

Thus it would also be obvious to use a batch process, semi-batch, or semi-continuous process in light of a continuous process. In other words, In light of Kyoto's teaching to fill the vessel once, or continuously supply and evacuate the reactant, it is not invention to supply the necessary fluorine compound in two batches.

Dividing the amount of necessary fluorine into two separate steps would have been prima facie obvious. It does not appear to be any more innovative than providing dual rinse cycles, or dual wash cycles in a dishwasher or clothes washer.

(See discussion with secondary reference below also)

and maintaining the second gaseous atmosphere between 1100 and 1300 °C, for a second reacting time sufficient to further dope the soot preform,

As indicated above, Kyoto's treatment temperature is 1100 C. For the artisan modifying the Kyoto process to supply the fluorine gas in two steps in a semi-continuous manner, it would have been obvious to use the same temperature for the second application of the dopant.

wherein the second halogen-containing gas has a partial pressure which decreases during the second reacting time, and wherein the second gaseous

atmosphere is pressurized to a gage pressure of at least 0.1 atm gage during the second reacting time;

Likewise (as with the temperature) it would have been obvious to use the same pressure for the second application of the dopant - Since Kyoto does not disclose changing the pressure at any time.

wherein the soot preform is retained in the vessel throughout and between: the step of maintaining the first gaseous atmosphere, the step of evacuating at least a portion of the first gaseous atmosphere, the step of providing the second gaseous atmosphere, and the step of maintaining the second gaseous atmosphere.

This would have been obvious because Kyoto does not removing the preform, nor would there be any reason to.

The secondary references are provided as evidence to show using a semi-continuous process is known and that there would be motivation to make such a modification.

Col. 3, lines 14-24 of Walker discloses that the gas (SiF_4) is corrosive and noxious – which provides motivation to not continuously supply the gas as in the Kyoto preferred embodiment– i.e. to create less corrosive and noxious gas. See also Dobbins col. 1, line 37 to col. 2, line 44 which discloses that use of halides can be very expensive in terms of pollution abatement and equipment losses.

Biswas is cited as showing it is known in the optical fiber making art that it is known to replenish a spent gas (col. 4, lines 11-15). In other words, with Kyoto's non-

preferred embodiment, it would have been obvious to remove the spent gas and replace it with fresh gas, if a substantial proportion of the fluorine in the atmosphere has be incorporated into the preform.

Simms is cited as evidence that batch, semi-continuous and continuous processes are known in the glass making art (col. 5, lines 8-13). Korenowski is cited to show that it is known that semi-continuous processes are sometimes the most economical (col. 3, lines 23-27). Thus in addition to the above: it would have been obvious to try to add the dopant gas in a semi-continuous manner – or otherwise provide the dopant in two phases, rather than in one step, or in a continuous manner, to find the most effective way of minimizing the noxious/corrosive gas.

As indicated by the Supreme Court in KSR vs. Teleflex:

> When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under §103.

Thus given the design need of reducing noxious/corrosive waste gas, and the universal market pressure of reducing cost, it would have been obvious to try to add the dopant gas in a semi continuous manner – or otherwise provide the dopant in two (or more) phases, rather than in one step or in a continuous manner, to find the most cost effective way of minimizing the noxious/corrosive gas. There are only a finite number of ways to add fluorine to a porous preform: supply the dopant gas all at once (Kyoto's

non-preferred embodiment), supply the dopant gas on a continuous basis (Kyoto's preferred embodiment), and a hybrid of the two – a semi continuous supply of the gas.

Claim 2: it would have been obvious to purge/fill the vessel as many times as necessary to get the required amount of dopant into the glass.

Claim 3 would have been obvious so as to remove the spent gas - to make room for fresh dopant gas.

Claims 7 and 9: it would have been obvious to purge the first gas to ensure that the atmosphere for the second application of gas is completely fresh.

Claims 8 and 10: Diatomic fluorine is added/created. See equation 2 of col. 3 of Kyoto. As to claim 10's "to compensate...." This is an intention that fails to define any manipulative steps. A claim does not define over the prior art just because someone has an intention/purpose "to compensate". In particular - since the claim does not require any actual reaction of the dopant gas. Furthermore, based on claim 23 reciting that the heating occurs during the reacting time, the "for a first reacting time" maintaining limitation of claim 1 needs to be interpreted as "for the purpose" – not to signify that they begin at the same time (see the 112 rejection regarding claim 23).

Claims 11 and 12: In the 3/28/2008 Office Action, Examiner first took Official notice that pressurizing an outer surface to offset pressurization of a vessel are conventional means to contain heated and pressurized reactions, so as to prevent bursting of the reaction vessel and release of gases. As discussed in the 11/06/2008 Office action at page 10, Appellant had not adequately traversed the Official Notice.

And in accordance with MPEP 2144.03, Examiner informed Appellant that the Official Notice is considered to be admitted prior art (page 8, 11/06/2008 Office action).

It would have been obvious to use double or –tripled walled vessels so as to prevent accidental death if the vessel should rupture.

Claim 13: Kyoto teaches this – for example see figure 13.

Claim 14: as per the secondary references (e.g. Walker col. 3, lines 14-18) the halide gas reacts with water to form HF – which is detrimental to the environment and equipment. It would have been obvious to remove all water (i.e. dry) from everything the gas contacts, prior to contact.

Claim 17 is inherently met because the pressures change.

Claim 18: as per equation 2 of Kyoto - every mole of the reactant would result in two moles of gaseous species.

Claims 19-21 and 23: it would have been obvious to perform routine experimentation to determine the optimal diffusing times and temperatures, depending upon the size and porosity of the preform.

Claim 29: in the 11/6/2008 Office Action, Examiner first took Official notice that it is conventional to dilute dangerous gases with inert gases so as to reduce their noxious characteristics, should they accidentally escape. The Official Notice was not traversed, thus in accordance with MPEP 2144.03, Examiner informed Appellant that the Official Notice is considered to be admitted prior art (page 8, 11/06/2008 Office action). It would have been obvious to use inert gas with the Kyoto halide, so as to reduce the danger to the artisan, should a leak develop.

The rest of the claims not specifically mentioned above would have been an obvious matter of routine experimentation to determine the optimal pressure, temperature or other well known result effective variables. As to those claims requiring the use of a makeup gas. Note col. 3, lines 43-45 of Kyoto which teaches adding reactant to maintain optimum reaction rate. It would have been obvious to have a sensor to detect the concentration of the reactant or a by product so as to determine when more reactant should be added so as to maintain the optimal rate.

(10) Response to Argument

It is argued that nothing in Example 1 and col. 2, line 63 of Kyoto results in a partial pressure of the halogen gas that decreases. Appellant concludes this based on Kyoto's Example 1 indicates that the pressure of pure SiF4 was maintained at 4 atm. for 2 hours. This argument pertains to the preferred embodiment, but the rejection relies on the non preferred embodiment where gas is NOT flowed. This is why col. 2, line 63 is referred to.

Nevertheless, even the preferred embodiment would read on this limitation. The fact that extra gas is flowed into the chamber indicates there had to be a pressure gradient, which means some of the gas reduces pressure. That is, to maintain the pressure, one would understand that one would have to add gas, because the amount of gas in the chamber is falling (i.e. the pressure is decreasing).

This is even true with the Kyoto figure 5 embodiment, even though gas is continuously being removed out of feature 10 tube, the concentration of the gas is being reduce by absorption/conversion, in addition to the pressure drop from inlet to outlet. The gas flows from an location of higher pressure to lower pressure - thus lowering its partial pressure. Although the change is pressure is likely light, the specification gives no guidance as to how much pressure drop is required by the claims, thus any amount of pressure drop is deemed to read on the claims.

Regarding col. 2, line 62 of Kyoto Appellant argues that even if it does suggest embodiments where SiF4 is not flowed into the atmosphere, such would not necessarily result in the partial pressure decreasing because a compensating amount of SiF4 gas can be added so that the partial pressure remains constant. This is not logical. Because adding a compensating amount would require flowing SiF4 into the atmosphere. It is not reasonable to conclude that a non-flowing embodiment can be implemented by adding an amount. Adding gas and flowing gas are substantially identical.

It is argued Kyoto repeatedly teaches adding a compensating amount. Examiner disagrees. First there is no mention of any sort of compensating in Kyoto. The passages at col. 3 and 4 of Kyoto merely mentions flowing the gas - And that is in relation to the preferred embodiment, not the non-preferred embodiment upon which the rejection relies.

It is argued that one would not be motivated to change Kyoto (to a semi-continuous process) because it would render Kyoto unsatisfactory for its intended

purpose. Examiner cannot agree at least because Applicant has not pointed out any intended purpose and why the modification would made the process unsatisfactory. It seems clear to Examiner the purpose is to dope the preform. This purpose would clearly satisfactorily result from the proposed modification.

Appellant's also argues that Kyoto teaches the pressure is to be maintained. Examiner disagrees. Although Kyoto discloses an embodiment where the pressure is maintained, it is clear from figures 2 and 3 of Kyoto, that any pressure can be used to dope the glass. It is well within the level of ordinary skill to add the fluorine in any manner desired- all at once, in a continuous manner, or in a step-wise fashion.

It is also argued Kyoto does not teach than no more that 0.5 slpm for the atmosphere flows out of the vessel. This is incorrect: col. 4, line 42 indicates only 0.05 l/m flows into the vessel, thus one would expect no more that 0.05 lm would flow out. More importantly, it would have been obvious to have none of the gas escape because it is noxious and expensive to treat.

It is argued that Walker relates to non-analogous art. Examiner disagrees. Walker is just cited as to show what is known - that SiF4 is dangerous stuff and that it combines with water to create other dangerous stuff. Examiner could have just as easily have taken Official notice of the same information. Appellant has not disputed that it is noxious.

It is also argued that Dobbins relates to non-analogous art. Examiner disagrees: Dobbins relates to the use of halides in the glass making art. It shows what one of ordinary skill in glass making understands that using halides can be expensive.

It is argued that Biswas does not teach providing a first atmosphere, at least partially evacuating the first atmosphere and then providing a second gaseous atmosphere. This is not very relevant. Biswas was merely cited as showing it is known to replenish a spent gas in the glass making art - Appellant does not dispute this.

It is also argued that Simms and Korenowski related to non-analogous art. It has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Simms is in Appellant's field of endeavor: glass making. Both Simms and the present claims are properly classified in class 65. Korenowski is reasonably pertinent to the particular problem with which applicant was concerned: the economy of processing. Korenowski teaches that semi-continuous processes are sometimes more economical. That basic concept is what applicant found: semi-continuous application (i.e. pulsing) of dopant gas is more economical than a fully continuous application of dopant gas.

Such is a common task of engineers: design the most cost effective and quickest way to create a product. There are any number of reasons why one of engineer would choose a semi-continuous method, for example if one does not have means to accurately control the flow rate of gases. Or if the waste gas system is more efficient at processing batches of waste gas, rather than processing a continuous stream of gas. Or if for safety reasons, the transfer of the noxious gas to the furnace should only be

done with close human supervision, it makes more sense to transfer the gas only on occasion, rather than have to have someone watch over it

Since the courts (see In re Dilnot, above) have held that continuous operations are obvious in view of batch processes. It would be a logical conclusion that a process half-way between continuous and batch processing (i.e. semi-continuous) would also have been obvious.

Appellant has not shown any new and unexpected result for supplying the gas in pulses (i.e. semi-continuously).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/John Hoffmann/

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